BARNES & THORNBURG LLP

11 South Meridian Street Indianapolis, Indiana 46204 (317) 236-1313 (317) 231-7433 Fax

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group:	1616 (Filing Receipt)	
Confirmation No.:	9879	}
Application No.:	10/765,336	
Invention:	VITAMIN RECEPTOR BINDING DRUG DELIVERY CONJUGATES	ELECTRONICALLY FILED ON October 13, 2006
Applicant:	Iontcho R. VLAHOV et al.	•
Filed:	January 27, 2004	
Attorney Docket:	20150-74359	
Examiner:	Jones, Dameron Levest	

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97(b)(3)

Commissioner for Patents P. O. Box 1450 Alexandria, VA 22313-1450

Sir:

This Statement is filed in the application identified above pursuant to 37 C.F.R. § 1.56. In accordance with 37 C.F.R. § 1.98(a)(2), a copy of each cited reference is enclosed herein. No representation is intended that a complete search has been made of the prior art or that no better art references than those listed herein are available. The filing of this Statement shall not be construed to be an admission that the information cited in the Statement is, or is considered to be, material to patentability as defined in § 1.56(b). None of the cited art is believed to disclose or suggest the invention recited in the claims of the above-identified application. It is therefore believed that the claimed invention is patentably distinguishable over these references.

Applicants do not believe that any fees are due in connection with this Information Disclosure Statement. However, the Commissioner is authorized to charge any fees that might be due in connection with this Statement to Deposit Account No. 10-0435, with reference to Matter No. 20150-74359.

Respectfully submitted,

BARNES & THORNBURG LLP

Kevin L. McLaren Agent Reg. No. 48,351

KLM:jdh Indianapolis, IN (317) 231-7776 813520_2

Sheet <u>1</u> of <u>7</u>

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE				ATTY. DOC 20150-7435 APPLICAN	59 Г		SERIAL NO. 10/765,336		
INFORMATION DISCLOSURE STATEMENT				Iontcho Vial	hov et al.	GROU	JP		
				1/27/2004		1616			
		U.S. I	PATENT DO	CUMENTS					
*Examiner Initial	Document N	Number Da	ite	Name	Class	Subclass	Filing Date if Appropriate		
A	AA 5,672,486	9/30/1	997 So	ulillou					
A	AB 4,691,024	9/1/19	987 Sira	ahata					
Α	AC 4,713,249	12/15	/1987 Sci	hroder					
А	AD 5,266,333	11/30	/1993 Ca	dy					
А	AE 5,417,982	5/23/1	1995 Mo	di					
А	AF .								
А	AG .								
Α	АН								
A	N .								
А	IJ								
A	NK								
		FOREIG	N PATENT	DOCUMENTS					
	Document N	umber Da	te	Country	Class	Subclass	Translation Yes No		
	NL								
A	AM								
	NN .								
	10					<u> </u>			
	VP								
A	IQ			want o					
		R REFERENCES (Incl		·					
	410-411 (19					les by caveor	lae," Science 255:		
		., "Folate receptors," A							
		Antony, A. C., "The biological chemistry of folate receptors," Blood 79(11):2807-2820 (1992).							
	Amide (Vind	., "Structure-Activity Reesine) Sulfate," J. Med	. Chem. 21:	88-96 (1978).			•		
	N Boger, D.L., Analogue of	et al., "1,2,9,9a-Tetrah the CC-1065 Alkylation	ydrocyclopro n Subunit," J	opa[c]benz[e J. Org. Chem. 5	jindol-4-one (57: 2873-2876	CBI): A Simp 6 (1992).	olified		
A	W Campbell et	al., "Folate-binding pro	itein is a mai	rker for ovariar	1 cancer," Car	ncer Res. 51	: 5329-5338 (1991).		
A		Single-chain Fv/folate Chem. 8(3): 338-346 (1		mediate efficie	ent lysis of fo	olate-recepto	r-positive tumor cells,"		
A	Y Christensen 237-284 (199		eptors for e	ndocytosis in	the renal pro	ximal tubule,	" Int. Rev. Cytol. 180:		
		Inhibition of leukemia godeoxynucelotides in				467, (1994)			
Examiner						Date Consi	idered		
*EXAMINER: II	nitial if reference co	nsidered, whether or n	ot citation is	in conformanc	e with MPEP	609.	nunication to applicant.		

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT			20150-74: APPLICAI Iontcho VI FILING D	ATTY. DOCKET NO. SERIAL NO. 20150-74359 10/765,336 APPLICANT Iontcho Vlahov et al. FILING DATE GROUP			
				1/27/2004		1616	
			U.S. PATENT	DOCUMENTS			
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	BA		ļ				
	BB		ļ			ļ	
	BC		<u> </u>				-
	BD		ļ				
	BE		<u> </u>				
		1	FOREIGN PATE	NT DOCUMENT	S	1	Translation
		Document Number	Date	Country	Class	Subclass	Yes No
	BF						
	BG						
	BH						
	ВІ						
	BJ						
	вк						
		OTHER REFERENCE				es, Etc.)	
	BL	Frankel, A.E., "Immunotox			` '		÷
	ВМ	Garin-Chesa et al., "Tri immunopathology and mo (1993).	olecular identifica	ition as a folate	-binding protei	in," Am. J. Pat	thol. 142(2): 557-562
	BN	Gottschalk, S., et al., "Fol- enhanced gene expressio	n," Gene Therapy	/ 1(3): 185 - 191 (1994).		al disruption results in
	ВО	Hofland et al., "Folate-targ	eted gene transfe	er in vivo," <i>Mol T</i>	Ther 5(6): 739-7	744 (2002).	
	BP	Holladay et al., "Riboflavin Acta 1426(1): 195-204 (19	199).				
	BQ	Holm, J., et al., "Folate red 17(4): 415-427 (1997).					
	BR	Holm, J., et al., "High-affin immunoreactivity, molecul 280(1): 267-271 (1991).	ar heterogeneity	and hydrophobio	domain of the	binding protein	n," Biochem J.
	BS	Kamen et al., "Delivery of recycles," J. Biol. Chem. 2	63: 13602-13609	(1988).		<u> </u>	
	BT	Kamen, B. A. and Capdev content," Proc. Natl. Acad.	Sci. USA 83: 59	83-5987 (1986).			
	BU	Kamen et al., "The folate r J. Clin. Invest. 87(4): 1442	!-1449 (1991).				
	BV	Kane et al., "The influence Partial characterization of (1986).	of extracellular f a membrane-ass	olate concentrati ociated methotre	ion on methotre exate binding p	exate uptake by protein," <i>J. Biol.</i>	y human KB cells. Chem. 261: 44-49
	BW	Kranz et al., "Conjugates of positive tumor cells for lys	is," Proc. Natl. Ac	ad. Sci. USA 92	(20), 9057-906	1 1995.	·
	вх	Ladino et al., "Folate-mayl 864 (1997).	ansinoids: target	-selective drugs	of low molecul	ar weight," <i>Int</i> .	J. Cancer 73(6): 859
	BY	Leamon, C. P. and Low, P Discovery Today 6: 36-43		liated targeting: f	from diagnostic	s to drug and g	gene delivery," Drug
Examiner				-		Date Consid	lered

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.

Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT				20150-74359 10 APPLICANT Iontcho Vlahov et al. FILING DATE G			SERIAL NO. 10/765,336 GROUP 1616		
-			U.S. PATEN	r DO				1010	
			1 1			-			Filing Date
*Examiner Initial		Document Number	Date		Name	Class	Sub	class ———	if Appropriate
	CA		-			ļ	<u> </u>		
	СВ						-		
	CD						 		
	CE					·	 		-
	CE	<u> </u>	OREIGN PATE	ENT E	OCUMENTS	3	I		
		Document Number	Date		Country	Class	Sub	class	Translation Yes No
	CF								
	CG					<u> </u>	ــــــ		
	СН						-		
	CI						+		
	CJ		 			 	+		
	СК	OTHER REFERENCE	ES (leghyding A)	tha	Title Date I	Bortingst Bog	oo Eta	. 1	
	CL	OTHER REFERENCE							nan cells." J. Biol.
		Leamon, C. P. and Low, P. S, "Cytotoxicity of momordin-folate conjugates in cultured human cells," J. Biol. Chem. 267(35): 24966-24971 (1992).							
	CM	Leamon, C. P. and Low, P. receptor endocytosis," Pro-	c. Nati. Acad. Sc	ci. US	SA 88(13): 55	72-5573 (199	1).		
	CN	Leamon, C. P. and Low, P. endocytosis into cultured c					onsible	tor tolat	e-protein conjugate
	со	Leamon, C. P. and Low, P. Target. 2(2): 101-112 (199-	S, "Selective ta	argeti	ng of maligna	int cells with o	cytotox	in-folate	conjugates," <i>J. Drug</i>
	CP	Leamon et al., "Folate-med 7(3): 157-169 (1999).	liated drug deliv	ery: o	effect of alterr	native conjuga	ation cl	nemistry,	" J. Drug Target
	CQ	Leamon et al., "Synthesis a Radiopharmaceutical," Bio-	conjug. Chem. 1	13(6):	1200-1210 (2002).			Control of the Control
	CR	Leamon et al, "Cytotoxicity translocation domain," J. B	iol. Chem. 268(33): 2	24847-24854	(1993).			
	CS	Lee et al., "Synthesis and e Chem. 10(7): 2397-2414, (2002).						
	СТ	Lee, R. J. and Huang, L., "I Tumor Cell-Specific Gene	Transfer," <i>J. Bio</i>	l. Ch	em. 271(14):	8481-8487 (1	996).		
	CU	Lee, R. J. and Low, P. S., * Biochim. Biophys. Acta 123	33: 134-144 (19	95).					
	CV	Lee, R. J. and Low, P. S, "I endocytosis," J. Biol. Chem	ı. 269(5): 3198-:	3204	(1994).				
	CW	Lee et al, "Measurement of Biophys. Acta 1312(3): 237	7-242 (1996).						•
	СХ	Lewis et al., "Receptor-med Cancer Res. 58(14): 2952-	2956 (1998).						
	CY	Liu et al., "Targeted Drug D Cytotoxicity Toward 5-FU-F							
Examiner								Consid	
		if reference considered, whet							
Draw line th	rough ci	itation if not in conformance a	and not consider	red. 1	Include copy	of this form w	ith nex	t commu	inication to applicant.

						SIIE	981 4 UI 1		
U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE				20150-743	ATTY. DOCKET NO. SERIAL NO. 20150-74359 10/765,336				
	PATE	INT AND TRADEMARK OFF	·ICE	APPLICANT Iontcho Vlahov et al.					
INFORMATION DISCLOSURE STATEMENT			FILING DA 1/27/2004		GROUP				
						1616			
			U.S. PATENT	DOCUMENTS					
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate		
	DA								
	DB								
	DC		L						
	DD								
	DE						<u></u>		
		<u> </u>	FOREIGN PATE	NT DOCUMENTS	s				
		Document Number	Date	Country	Class	Subclass	Translation Yes No		
	DF								
	DG								
	DH								
	DI								
	DJ								
		OTHER REFERENC							
	DK	Lu, J. Y. and Low, P. S., "F syngenetc murine tumors,"	Cancer Immuno	ol Immunother 51:	153-162 (200)2).			
	DL	Lu et al., "Folate-targeted enzyme prodrug cancer therapy utilizing penicillin-V amidase and a doxorubicin prodrug," J. Drug Target 7(1): 43-53 (1999).							
	DM	Lu, J. Y. and Low, P. S., "F Drug Del Rev 54(5); 675-6	93-(2002)	70.0					
	DN	Luo et al., "Efficient synthe differentiated derivatives o	f folic acid," J. Ar	m. Chem. Soc. 11	9: 10004-100	13 (1997).			
	DO	Mathais et al., "Synthesis of radiopharmaceutical," Biod	conjug Chem. 11	(2): 253-257 (200	0).				
	DP	Mathais et al., "Receptor-n KB tumor xenografts," Nuc	d Med Biol 26(1):	23-25 (1999).					
	DQ	Mathias, C. J. and Green, receptor-targeted radiopha	rmaceutical," Nu	ıcl. Med. Biol. 25(6): 585-587 (1	998).			
	DR	Mathias et al., "Tumor-Sele Gallium-67-Deferoxamine-	Folate," J. Nucl.	Med. 37(6): 1003	-1008 (1996).				
	DS	Mathias et al., "Indium- 11 Nucl. Med. 39(9): 1579-15	85 (1998).						
	DT	Matsui et al., "Studies on n 189-198 (1968).	•	·	•				
	DU	Melani et al., "Targeting of antifolate receptor antibod	y," Cancer Res. !	58(18): 4146-4154	4 (1998).				
	DV	Melby et al., "Entry of prote	ein toxins in pola	rized epithelial ce	lls," Cancer R	es. 53(8): 1755	-1760 (1993).		
	DW	Mislick et al., "Transfection Chem. 6(5): 512-515 (1999)		ine DNA complex	es: evidence	for lysosomal d	lelivery," <i>Bioconjug.</i>		
	DX	Morshed et al., "Folate trar cultured human proximal to	ubule cells," J. N	utr. 127(6): 1137-	1147 (1997).	<u> </u>	•		
	DY	Olsnes, et al., "Immunotox (1989).				Immunol. Tod	ay 10: 291-295		
Examiner						Date Consid	ered		
*======================================	2. Initial	if reference concidered who	than or not citatic	un ic in conformat	SCO With MORE	800			

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.

Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

U.S. DEPARTMENT OF COMMERCE					ATTY, DOCKET NO. SERIAL NO. 20150-74359 10/765,336				
PATENT AND TRADEMARK OFFICE				APPLICANT		107750,			
INFORMATION DISCLOSURE STATEMENT				Iontcho Vlahov et al. FILING DATE GROUP					
'	NEORIVI	ATION DISCLOSURE STATI	ZIVILLY I		1/27/2004	-	1616		
***************************************			U.S. PATEN	IT DO	CUMENTS				
*Examiner		Document Number	Date		Name	Class	Subclass	Filing Date if Appropriate	
i i i i i i i i i i i i i i i i i i i	EA								
	EB								
	EC								
	ED				·				
	EE								
		,	OREIGN PAT	ENT	OCUMENTS			Topolotion	
		Document Number	Date		Country	Class	Subclass	Translation Yes No	
	EF							-	
	EG			-					
	EH							-	
	EJ								
		OTHER REFERENCI	ES (Including (Author	Title Date P	ertinent Page	s Ftc.)		
.	EK	Patrick et al., "Folate Rece	ptors As Poten	tial Th	erapeutic Targ			ors of Sv40	
	EL	Transgenic Mice," <i>J. Neurooncol.</i> 32(2): 111-123 (1997). Patrick et al., "Intracerebral bispecific ligand-antibody conjugate increases survival of animals bearing endogenously arising brain tumors," <i>Int. J. Cancer</i> 78(4): 470-79 (1998).							
	ЕМ	Prasad et al., "Functional coupling between a bafilomycin A1-sensitive proton pump and a probenecid-sensitive folate transporter in human placental choriocarcinoma cells," <i>Biochim. Biophys. Acta</i> 1222(2): 309 (1994).							
	EN	Reddy et al., "Retargeting of 3): 77-82 (2001).	of viral vectors	to the	folate recepto	r endocytic p	athway, J Cor	trol Release," 74(1-	
	EO	Reddy et al., "Optimization J. Pharm. Sci 88(11): 1112		gated	liposomal vec	tors for folate	receptor-med	liated gene therapy,*	
	EP	Rijnboutt et al., "Endocytos (1996).					-		
, ,	EQ	Ross et al., "Differential reg established cell lines. Phys							
-	ER	Rothberg et al, "Cholestero	J. Cell Biol. 11	cluster 1(6): 2	ing of the glyc 931-2938 (199	ophospholipio 90).	d-anchored me	embrane receptor for	
	E\$	Rothberg et al., "The glyco coated pit endocytic pathw	phospholipid-li ay," <i>J. Cell Bio</i>	nked f /. 110(olate receptor (3): 637-649 (1	internalizes f			
	ET	Roy et al., "Targeting T cel 76(5): 761-66 (1998).	ls against brair	tumo	rs with a bispe	ecific ligand-a	ntibody conjug	gate," Int. J. Cancer	
	EU	Sadasivan et al., "The com determined from the cDNA					nding protein t	rom KB cells	
	EV	Senter et al., "Developmen Carbamate Disulfides," J. (Org. Chem. 55:	2975	-2978 (1990).			-	
	EW	Smart et al., "Protein kinas caveolae," J. Cell Biol. 124	(3): 307-313 (1	1994).	•		• • • • • • • • • • • • • • • • • • • •		
	EX	Smart et al., "Clustered fold Biol. 134(5): 1169-1177 (19	996).		•		• •		
	EY	Li et al "Targeted delivery o	of antisense oli	godeo	xynucleotides	by LPDII," J.	Liposome Re	s. 7(1): 63 (1997).	
Examiner							Date Consid	lered	
		if reference considered, whe itation if not in conformance a						unication to applicant.	

Sheet <u>6</u> of <u>7</u>

U.S. DEPARTMENT OF COMMERCE				ATTY. DOCKET NO. SERIAL NO. 20150-74359 10/765,336					
PATENT AND TRADEMARK OFFICE				APPLICANT					
l l	NEORM	IATION DISCLOSURE STATE	FMENT		Iontcho Vial			GROUP	
	IVI OIVIII	ATTON DIOGEOGOTE C.,			1/27/2004	E		1616	
			U.S. PATEN	VT DO	CUMENTS				
*Examiner		Document Number	Date		Name	Class	Sut	bclass	Filing Date if Appropriate
111111111111111111111111111111111111111	FA			†					
	FB								
	FC			<u> </u>			L_		
	FD	ļ		Ь—			-		
	FE		TODE:ON DAI		- AOI MAENTO				<u> </u>
	·	*	FOREIGN PAT	ENIL			Γ		Translation
		Document Number	Date		Country	Class	Sut	bclass	Yes No
	FF			-					_
	FG FH		-	\vdash			_		
	FI			╁		-		·	
	FJ			 					
		OTHER REFERENCE	ES (Including :	Author	. Title, Date, P	Pertinent Page	es, Et	c.)	
	FK	Steinberg, G. and Borch, R	R. F., "Synthesi	is and	Evaluation of I	Pteroic Acid-C	Conju	gated Nitro	
	FL	Phosphoramidates as Folate Receptor-Targeted Alkylating Agents," J. Med. Chem. 44: 69-73 (2001). Toffoli et al., "Overexpression of folate binding protein in ovarian cancers," Int. J. Cancer 74(2): 193-198							
		(1997).							
	FM	Turek et al., "Endocytosis of folate-protein conjugates: ultrastructural localization in KB cells," J. Cell Sci. 106: 423-430 (1993).							
	FN	Turk et al., "Characterization of a novel pH-sensitive peptide that enhances drug release from folate-targeted liposomes at endosomal pHs," <i>Biochim Biophys Acta</i> 1559(1): 56-68 (2002).							
	FO	Varma, R. and Mayor, S., * 394(6695): 798-801 (1998)).	•					
	FP	Vyas, D., et al., "A practical	I synthesis of r	mitomy	cin A and its a	analogs," J Or	rg Ch	em 31:430	7-4309 (1986)
	FQ	Vogel et al., "Peptide-Media Compartments," J. Am. Che	em. Soc. 118(7): 158	31-1586 (1996	s).			
	FR	Wang, S. and Low, P. S., "i acids to cancer cells," J. Co	ontrol Rel 53(1	1-3): 39	9-48 (1998).				
	FS	Wang et al., "Delivery of an receptor into cultured KB of Sci. USA 92(8): 3318-3322	ells with liposo						
	FT	Wang et al., "Synthesis, pu radiopharmaceutical for tun	rification, and	tumor Biocon	cell uptake of ii. Chem. 7(1):	67Ga-deferox 56-62 (1996)	xamir	ne—folate,	a potential
	FU	Wang et al., "Design and sy Bioconjug Chem. 8(5): 673	ynthesis of [11 3-679 (1997).	1In]DT	TPA-folate for	use as a tumo	or-tar	•	
	FV	Weitman et al., Distribution Res., 52(12), 3396-3401, 1	992.						
	FW	Weitman et al., "Cellular loo homeostasis," Cancer Res.	. 52(23): 6708-	-6711 ((1992).			•	
	FX	Wiener et al., "Targeting de receptor," Invest. Radiol. 32	2(12): 748-54 ((1997).					<u>-</u>
	FY	Wu et al., "Clustering of GP caveolin," J. Membr. Biol. 1				ndent of both			
Examiner								te Conside	red
		if reference considered, whet itation if not in conformance a							nication to applicant.

Sheet 7 of 7

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE			ATTY. DOC 20150-743: APPLICAN	359	SERIAL	SERIAL NO. 10/765,336		
ı		IATION DISCLOSURE STA		Iontcho Vla	lontcho Vlahov et al. FILING DATE GROUP			
			LLO DATENT			1616		
			U.S. PATENT	DOCUMENTS			T = 5 (
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate	
	GA				+			
	GB	 	 					
	GD		+		+	+		
	GE		+		+	1		
			FOREIGN PATE	NT DOCUMENTS	s			
		Document Number	Date	Country	Class	Subclass	Translation Yes No	
	GF				Ţ			
	GG				<u> </u>			
	GH		+		_			
	GI		+		-			
	GJ	OTHER REFEREN	CES (Including Au	nthor, Title, Date,	Pertinent Pac	des. Etc.)		
	GK	Zimmerman, J., "Folic aci carriers," Gastroenterol. 9	id transport in orga	an-cultured mucos			nce for distinct	
	GL	Control of the contro	20(1): 22 : 21 2 (: 2	<u></u>				
	GM							
	GN							
	GO							
	GP							
	GQ							
	GR							
	GS							
	GT							
	GU							
	GV							
	GW						-	
	GX							
	GY							
Examiner						Date Consid	ered	
		if reference considered, whitation if not in conformance					unication to applicant.	